IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First named inventor: Gary A. Kinstler	Docket No. 03-1265
Serial No.10/813,296	Filed: Mar. 30, 2004
Examiner: Kan Yuen	Art Unit: 2616
Title: METHODS AND SYSTEMS FOR A DATA PROCESSING SYSTEM HAVING RADIATION TOLERANT BUS	Confirm. No. 4531

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Applicants request review of the final rejection mailed March 16, 2010 in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reasons stated in the attached sheets.

A petition for a ONE month extension of time is being filed with this response. The petition extends the period for response to July 16, 2010.

Respectfully submitted,

/Hugh Gortler #33,890/
Hugh P. Gortler
Reg. No. 33,890
(949) 454-0898

Date: July 16, 2010

REMARKS

The final office action dated 16 March 2010 indicates that base claims 37 and 41 are rejected under 35 USC §103(a) as being unpatentable over Kramer US Patent No. 6,466,539 in view of Gupta U.S. Patent No. 5,787,070 and Fuchs U.S. Patent No. 5,923,830. The '103 rejection is based on legal and factual deficiencies.

Consider base claim 37, which recites a method of clearing latch-up and other single event functional interrupts in a data processing system having a plurality of nodes operatively connected to a serial data bus. In certain environments, the latch-up is radiation-induced. In the system of figure 1, for example, the physical layer controller, or the link layer controller, or both, can experience latch-up. The method includes:

> periodically transmitting a first message from a first node to a second node on a first line of the serial data bus;
>
> determining whether the first message was received by the second node; and
>
> transmitting a recovery command to the second node if the second node does not respond to the first message, the recovery command transmitted via an alternative data bus path, the recovery command causing the second node to disrupt a monostable condition in the second node and restore functionality of the second node without disrupting the first node and any other nodes of the plurality.

1. The office action does not consider the totality of the record. *Ex Parte Frye*, Appeal 2009-006013, 2010 WL 889747 *3-4 (BPAI Feb. 26, 2010) (Precedential) holds the following:

> The examiner has an initial burden to set forth the basis for a rejection, so as to put a patent applicant on notice of the reasons why the applicant is not entitled to a patent on the claim scope sought. This "prima facie case" is a procedural mechanism that shifts the burden of going forward to the applicant, who must then produce argument, with or without evidence, rebutting the initial case of unpatentability. The applicant's rebuttal evidence may relate to any of the *Graham* factors including the so-called secondary considerations. "The examiner then determines patentability 'on the totality of the record, by a preponderance of the evidence with due consideration to the persuasiveness of argument.'"

The office action cites three documents that disclose three different approaches. None describe a system for clearing a monostable condition (latch-up) in a faulty node without affecting other nodes. Kramer *powers down an entire system* when a fault in the system is suspected. Fuchs *resynchronizes all processors in a system* if a mono-stable condition is suspected in a faulty processor. Gupta doesn't even attempt to disrupt a mono-stable condition, it simply *replaces a failed node* with a redundant node. And all three approaches are different than the approach recited in claim 37, which recites transmitting a recovery command via an alternative data bus path to cause a latched-up node to disrupt a monostable condition and restore functionality without disrupting any other nodes.

So given a first (Kramer's) approach, would a person of skill in the art arrive at a second different approach (the method of claim 37) if guided by third and fourth approaches that go in different directions than the first and second approaches? Clearly not. In view of the evidence cited by the Patent Office, a person skilled in the art would not arrive at the method of claim 37.

Moreover, the totality of the record does not just include the evidence cited by the Patent Office. It also includes a NASA Tech Brief entitled "Radiation-Tolerant Dual Data Bus," which was made of record by the applicant. The Tech Brief describes work done by the applicant and recited in the claims

NASA Tech Briefs in general describe innovative approaches to problems that are of concern to NASA. They call attention to leading edge work within the NASA community. In this instance, the problem of concern to NASA is radiation-induced latch-up and other single-event upsets. In the opinion of the experts in the field, the claimed invention offers an innovative approach that enables "error-free operation of a data bus that includes ... components that are inherently susceptible to single-event upsets."

Page 2 of the final office action alleges that the Tech Brief doesn't "evaluate the non-obviousness of the invention." To the contrary, the Tech Brief provides evidence that the approach recited in claim 37 is leading edge work within the NASA community. Now combine this with the cited documents, which describe different approaches than

the method of claim 37. The totality of the record indicates that claim 37 is not obviousness.

Rather than consider the totality of the record, rather than consider the general nature of the claimed approach, the final office action gets mired down in details as to whether the Kramer, Fuchs and Gupta describe individual elements. It uses the applicant's structure as a template and selects the individual elements from references to fill the gaps. This practice is known as impermissible hindsight reconstruction. See, e.g., In re Gordon, 18 USPQ.2d 1885, 1888 (Fed. Cir. 1991).

Failing to consider the totality of the record is legal error. So is impermissible hindsight reconstruction. For these legal errors alone, the '103 rejection of base claim 37 should be withdrawn.

2. The final office action omits elements necessary to establish prima facie obviousness. The final office action cites three documents that disclose three different approaches. None describe a system for clearing latch-up in a faulty node without affecting other nodes. Kramer *powers down an entire system* when a fault in the system is suspected. Fuchs *resynchronizes all processors in a system* if a mono-stable condition is suspected in a faulty processor. Gupta simply *replaces a failed node* with a redundant node.

None of these documents describe transmitting a first message to a node, and transmitting a recovery command to the node if the node does not respond to the first message, where the recovery command is transmitted via an alternative data bus path and causes the node to disrupt a monostable condition in the node and restore functionality of the node without disrupting any other nodes. Thus, the '103 rejection is factually deficient. For this additional reason, the '103 rejection of base claim 37 should be withdrawn.

3. The final office action does not properly resolve the level of skill in the art, as required by Graham. The final office action only considers Gupta and Fuchs. However, it does not consider the NASA Tech Brief, which also provides evidence of the level of skill (and more direct evidence at that). The NASA Tech Brief suggests

that a person of ordinary skill would not make the jump from, say, Kramer's system to the method of base claim 37. Experts in the field regard the claimed invention as an innovative approach that enables "error-free operation of a data bus that includes ... components that are inherently susceptible to single-event upsets." The final office action does not give the NASA Tech Brief its due with respect to the level of skill in the art. For this additional legal error, the '103 rejection should be withdrawn.

4. The '103 rejection does not comply with MPEP 2142 and the U.S. Supreme Court's holding in KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395-97 (2007). According to the Supreme Court, "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."

The final office action does not provide a clear articulation for combining the features that are disclosed by Kramer, Gupta, and Fuchs. Pages 5 and 7 of the final office action allege that the motivation of using Gupta's teachings is to provide "redundancy in the network." However, the office action does not offer any articulation as to why redundancy in Kramer's system would be beneficial to Kramer's system, or how the specific teachings of Gupta would be applied to Kramer's system, or how Kramer's system would be modified.

Page 8 of the final office action alleges that the motivation of using Fuchs's teachings is to provide "circuit stability in hazardous environment". However, the office action offers no factual underpinnings to suggest that shutting off one of several processors in a computer would solve Kramer's problem, nor does it offer a clear articulation of how the modifications to Kramer would achieve circuit stability. Kramer's subscribers appear to be industrial machinery. Kramer does not identify latch-up as a potential hazard. Page 4 of the final office action attempts to clarify, but doesn't.

The office action commits legal error by not providing a clear articulation of obviousness. For this additional reason, the '103 rejection of base claim 37 should be withdrawn.

5. The final office action does not give proper weight to secondary evidence of non-obviousness. The NASA Tech brief can also be regarded as secondary evidence of non-obviousness, as it provides evidence of a solution to a vexing problem. The final office action appears to require the NASA Tech Brief, in isolation, to overcome any presumption of non-obviousness. That is legal error. In view of the lack of direct teachings, the unsubstantiated arguments, and the lack of articulated reasoning to support prima facie obviousness, the NASA Tech Brief strongly suggests that the method of claim 37 is not obvious. The NASA Tech Brief is not dispositive, but it provides the best evidence in the record. It speaks directly to the problem faced by the applicant, and the solution recited in the claims. Failure to treat the Tech Brief as such is legal error. For this additional reason, the '103 rejection of base claim 37 should be withdrawn.

6. **The '103 rejection of base claim 41 should be withdrawn for the reasons above.**

7. The office action provides no evidence of additional features recited in certain dependent claims. For instance, Kramer, Gupta and Fuchs are all silent about latch-up in a node having physical and link layers (claims 38-39 and 42-43). Since Kramer is silent about the components of the controllers 56-62, it follows that Kramer is also silent about dc-isolation of the physical layer controller from the link layer controller, and that disrupting a monostable condition in the link layer controller is independent of disrupting a monostable condition in the physical layer controller. This allows surgical correction of a latch-up, without having to power down an entire component. Thus, the final office action does not establish prima facie obviousness of claims 38-39 and 42-43.

Kramer, Gupta and Fuchs are silent about detecting a surge which might indicate latch up (claims 10 and 15). Fuchs assumes that a processor is experiencing latch-up if resynchronization fails. Kramer's system determines whether heartbeat messages are received, and shuts down the system if the messages are not received. Gupta is altogether silent about latch-up. Thus, the final office action does not establish prima facie obviousness of claims 10 and 15.

Respectfully submitted,

/Hugh Gortler #33,890/
Hugh P. Gortler
Reg. No. 33,890
(949) 454-0898

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